

VIRGINIA WILDLIFE

MAY 2004

TWO DOLLARS





Director's Column

William L. Woodfin, Jr

As Memorial Day weekend approaches and a wave of boating enthusiasm washes over us, we just want to remind you to take those few extra precautions to make sure you have a safe and enjoyable boating season.



Whether you're on the water to just boat or to boat and fish, the single most important message that we can relay to you is that wearing a life jacket is a lifesaver. In 2003, 18 out of the 21 boating fatalities in Virginia likely would have been prevented if the individuals had been wearing their life jackets. Recent advances in the design of life jackets, especially the inflatables that are lightweight and comfortable and can be worn around the waist, make wearing this critical piece of safety equipment easy.

The second message is do not mix alcohol and boating. But if you allow the use of alcohol on your boat, always make sure you have someone designated as your non-

drinking operator. Contrary to popular belief, most boaters do not take alcohol with them. A recent survey suggests that nearly three out of every four boaters would rather spend the day on the water without the worry of alcohol.

This is good news.

Finally, we encourage all boaters and anglers fishing from a boat, those both new to the sport and the seasoned skipper, to take a boating safety course. With nearly a quarter of a million powerboats and tens of thousands of non-motorized boats like canoes, kayaks and rafts on Virginia's waterways, we all need to be speaking the same nautical language. A boating safety course provides a good foundation for safe boating, helps to prevent you from getting a summons for violations, and prepares boaters for emergencies. Experienced boaters will find that the course will keep them up-to-date on boating regulations and refresh their skills. Courses are offered statewide and can be taken in the classroom, over the Internet, or through home study. Information on these courses can be found on our Web site at www.dgif.state.va.us. It's so easy, there's no reason not to take one.

Before casting off the mooring lines and saying "bon voyage," let me close by reminding you to "Be Responsible, Be Safe, and Have Fun!" We sincerely hope that everyone has a great summer in 2004 on the waterways of our wonderful Commonwealth.

Mission Statement

To manage Virginia's wildlife and inland fish to maintain optimum populations of all species to serve the needs of the Commonwealth; to provide opportunity for all to enjoy wildlife, inland fish, boating and related outdoor recreation; to promote safety for persons and property in connection with boating, hunting and fishing.

Dedicated to the Conservation of Virginia's Wildlife and Natural Resources



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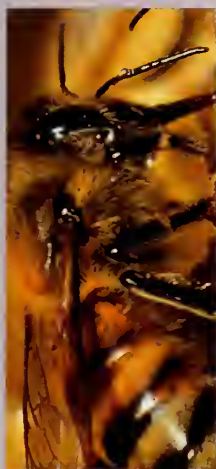
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About the cover: Honeybees, (*Apis mellifera*), are not only social insects, but also hard workers. In a typical colony you will find three kinds of bees. The worker bee, or "girls" as they are referred to in this issue, collect nectar to make honey, feed the queen bee and

larvae, produce the wax comb to store the honey in, and protect the hive. Drone bees mate with the queen bee, who then can lay as many as 3,000 eggs in a single day. A healthy colony of honeybees can produce far more honey than they can eat, which leaves an abundance of honey for people to harvest and enjoy. Photo ©Marie & Milan Majarov



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The Girls of

by Marie Majarov
photos by Marie & Milan Majarov

A honey of a bee story has one Virginia family praising the sweet success of their homegrown honey business.

The Lewis family of Winchester, Virginia, has 200,000 unique and strangely marvelous friends in their backyard. Honeybees! Graceful, golden insects, master pollinators, they provide a glimpse of pure unspoiled nature.

A fascination with nature and a taste for homegrown honey have

drawn this family to their avocation with bees. John and his 7-year-old daughter, Rebecca, are head beekeepers; Nancy, 10-year-old Sarah, and 4-year-old Jacob pitch in with interest and effort to make the family's apicultural endeavors a sweet success.

"But bees sting"! you say. *Apis mellifera* originated millions of years



ago in Asia. Virginia honeybees are decedents of Asian bees that migrated to what is now Europe where they nested safely in hollow trees and developed a mild, relaxed disposition. Our honeybees, introduced by the early colonists, only sting defensively and rarely away from their hives unless provoked or frightened. Africanized bees, which are unlikely to ever become estab-



Opposite page: Rebecca uses smoke to keep the honeybees calm.

Upper left: A feral colony of honeybees lives in this old walnut tree on the Lewis property.

Above: Rebecca proudly watches honeybees on the top of a well-tended hive.

Right: A frame containing honey and wax shines with a golden glow, as it is backlit by the afternoon sun.



Summer

lished in Virginia due to their intolerance of our temperate climate, are significantly more ferocious in defense of their hives. Paper wasps, hornets and yellow jackets nesting under porch overhangs or in yards

Right: The Lewis family: (left to right) Rebecca, Sarah, Nancy, Jacob and John.



are far more likely to sting than honeybees.

Through the ages would-be beekeepers fashioned carved-out logs, clay pots, and straw skeps to house honeybees. Today, modern beekeepers like the Lewis family use Langstroth hives, classic wooden boxes with hanging frames and a

duties are many: housekeeping, undertaking, nursery duty, attending the queen, controlling hive temperature and humidity, building and architecture of the wax comb, and guard duty. In the second half of their lives, field duty and foraging for pollen and nectar are primary.

Foraging bees need to visit five

vigorously for their sisters to communicate maps locating choice flowers and recruit additional foragers.

Gathering pollen into their baskets the Lewis girls get their legs, antennae, and bodies covered with golden granules and then deposit this precious cargo onto new flowers as they travel. University of Virginia



John and Rebecca inspect the brood cells.

practical top opening. These boxes enable easy, safe removal of the honey without harming the bees, make the hives portable, and provide adequate protection for winter. The main hive body is composed of several chambers. The lower one functions as a nursery or brood chamber where thousands of larvae hatch into adult bees while the upper ones serve as a pantry for stores of capped honey.

Each of the five Lewis hives is a colony unto itself containing 10,000 to 60,000 bees: a queen, a few drones, and thousands of workers. In a queenright hive a healthy queen will lay more than 1,500 eggs a day, over one million eggs in her lifetime of two to four years. Drones seldom interact with their queen; they simply eat and periodically fly off to mating sites to fertilize new queens from other colonies.

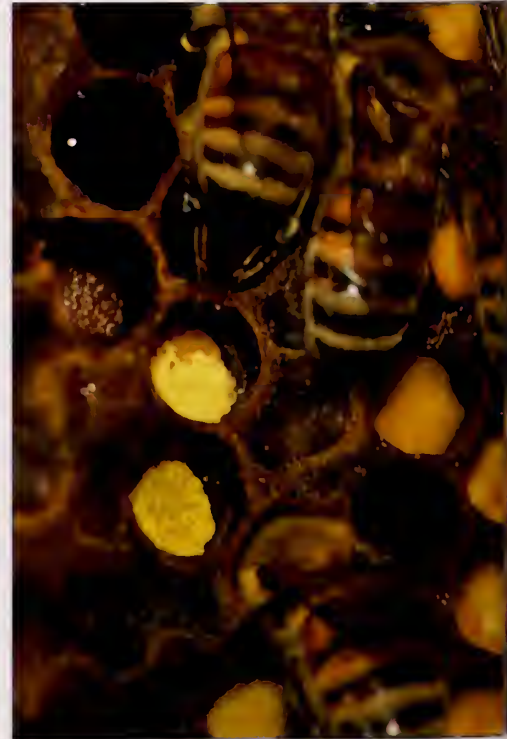
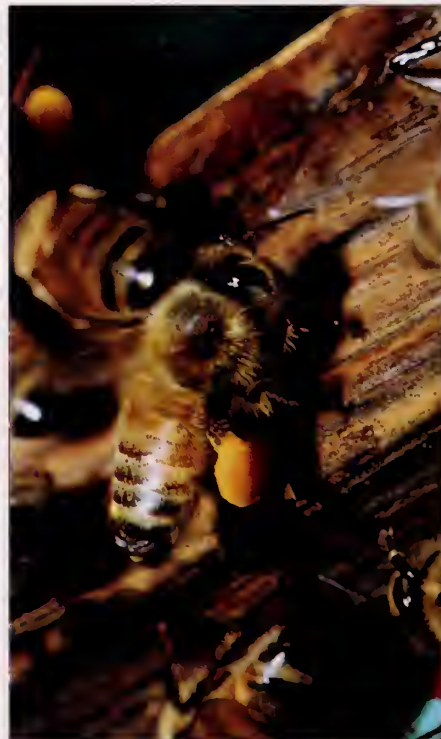
Worker bees, often referred to as the *girls*, are the real heart and soul of the colony. These smallest bees are equipped with specialized baskets attached to their back legs in which they can tote pollen. The girls' hive



million flowers to produce a single pint of honey. Assisted by ultraviolet vision, the girls visit flowers looking for sweet treasures within a two to three mile radius of their hive—an area covering up to 18,000 acres! Upon returning home they dance



Above: Young honeybees in the process of emerging from brood cells. Below: When smoked, honeybees calm and turn their heads into hive cells. Below left: This photo shows cells with pollen and nectar as well as a girl with full pollen baskets.



entomologist Dr. T'ai Roulston, who specializes in the study of plant pollinator interactions at Blandy Experimental Farm near Winchester, explains that this process which effects pollination is "environmentally and economically the single most valuable contribution of the honeybee."

Clover, blackberry, blueberry, basswood, asters, goldenrod, sumac, serviceberry, tupelo, wild cherry, yellow poplar, and chokeberry are but a few of the wild flora that honeybees play a role in pollinating. Many of our native wildlife species, including white-tailed deer, ruffed grouse, bobwhite quail, black bear, songbirds, and wild turkey depend on these wild flora for food and cover. Honeybees are also important in pollinating plants needed for dune and marsh stabilization.

Dr. Roulston reports that the number of feral colonies of honeybees, so very important to wild flora and agriculture, has 'declined precipitously.' The major cause, describes Dr. Roulston, is the invasion by the Asiatic varroa mite, *Varroa jacobsoni*. "World wide," he says, "there are over 20,000 species of bees ...only honeybees host the varroa mite."

Master beekeeper Billy Davis of Purcellville, Virginia, who has been involved with beekeeping for 50 years, states specifically that in 1991 in Southern Virginia, and 1993 in Northern Virginia "80 percent of *all* honeybees, feral and managed, were lost." Beekeeping in our state was decimated by the tiny varroa mite.



Above: A close-up look at a varroa mite, (*Varroa jacobsoni*). Upper right: Long cords soaked in beeswax, honey and mineral oil is an experimental method being tried to control devastation by the varroa mite.

dad place a queen excluder over the main hive body. This narrow slatted panel prevents the queen from laying eggs in the honey supers placed above the lower chambers. The girls will draw out the comb, fill each cell with pure honey, and finally cap off their product with bees wax, another gift of honeybees.



Harvest day is a delicious event. The Lewis family and neighbors gather in a honey tent to extract the capped honey. A heated electric knife is used to melt and slice the wax caps off each frame which is then placed in an extractor that



Dr. Roulston feels this pest seriously complicates beekeeping by "making more intense hands-on work necessary" to insure the safety of these valuable insects. Fewer managed colonies lead to less frequent swarms, which replenish feral colonies. Studies are in progress to learn how to bolster the honeybees' defenses against this intruder. Long cords soaked in beeswax, honey, and mineral oil, and placed on top of the honey frames is one remedy being tried by John Lewis with encouraging success.

Successful collection of pollen and nectar leads to a honey flow. Each colony needs about 50 pounds of honey for winter subsistence. In Virginia there will often be 40 extra pounds per hive of the golden sweetener for the beekeeper, family, and friends to enjoy. When honey-flow time nears, Rebecca and her



A queen excluder keeps the queen in the lower chambers and pure honey above.

spins, separating the honey from the comb.

Pantries full, beekeepers and bees turn their energies to winter preparation. The girls, knowing drones are



Above: Rebecca, with dad's help, uncaps a beautiful frame of capped honey. Upper right: Rebecca and Sarah will turn the handle to spin the frames dad places in the extractor.



voracious eaters, systematically expel each male from the hive, literally tossing them out the door to die. As the temperature drops the workers gather around their queen and generate heat by shivering their wings to keep the center of the cluster a balmy 92°F until spring brings warmer air and new blooms.

Northern Virginia, particularly Loudoun County, is the most active and thriving location for beekeeping in the Commonwealth due in great part to the tireless efforts of master beekeeper, teacher, and honeybee publicist Billy Davis and enthusiastic families like the Lewis family. The rebuilding and strengthening of apiculture is critical to the continued well-being of our wild flora, fauna, and agriculture as well as to preserving a golden view of unspoiled nature. Honeybees, the *girls of summer*, are indeed our friends. □

Marie Majarov lives in Winchester, Virginia with her husband, Milau. Both are practicing clinical psychologists who enjoy nature and outdoor photography.



For More Information

Loudoun Beekeepers Association
www.loudounbee.org

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Above left: Rebecca turns the big handle and Sarah opens the spigot for the honey to flow through a sieve-topped honey bucket. Above: Honey is sieved for impurities as it goes into the honey bucket.

Wild in the Woods

Pollination Partners

story by Carol A. Heiser
illustrations by Spike Knuth



Stop for a moment and think about all the delectable fruits and fresh vegetables that greet the eye in the produce section of your local grocery store. Bananas, peaches, oranges, squash, spinach, tomatoes—and the list goes on and on. Farmers expend enormous time and effort to put food on our tables. But behind the scenes, at a much more fundamental level of the food web, are diminutive field workers known collectively as *pollinators*, whose diligence usually goes unnoticed and is probably even taken for granted. We owe a debt of gratitude to innumerable tiny bees, efficient wasps, productive ants, busy hummingbirds and other industrious wildlife species that perform a life-supporting service every day. Without these intrepid workers, most plants would not be pollinated. Without pollination, flowers could not form; and without flowers, plants could not reproduce and grow fruits and seeds.



Previous page: A ruby-throated hummingbird (*Archilochus colubris*), feeds on the nectar from the flowers of a wild columbine, (*Aquilegia canadensis*). Left: Honeybees (*Apis mellifera*), are excellent pollinators as they hop from one plant to another. Here a honeybee has found a field thistle, (*Cirsium discolor*) to feed on. Below: Hummingbird moths, unlike other species of moths, feed during daylight hours. They also help with the pollinating process

and remaining more localized, concentrating on the same plant sources year after year.

There are several species of pollinators whose migration patterns follow the sequential blooming of flowering plants along "nectar corridors" as the spring season unfolds. Here in the east, monarch butterflies follow a time-worn route through the coastal states; groups of butterflies stop at various points along the way to feed and breed, while other groups continue northward. In the western states, nectar-feeding bats follow the cactus blooms from Mexico to Arizona and up through parts of California. The western white-winged dove and the endangered lesser long-nosed bat are just two species that play a substantial role in pollinating agaves, century plants (used for producing tequila), and the huge "cactus forests" of the Sonoran Desert, home to those misshapen saguaro giants. Unfortunately, the southwestern states are experiencing a habitat decline similar to that in the east, as desert and scrub vegetation are cleared for farms or pastures, with resulting detrimental impacts to pollinators associated with those plants. Grassland and prairie habi-

A Patchy Existence

If we were to think of ecology as a car and the sun as the engine, at the wheel would be the pollinators, driving countless ecological processes in terrestrial environments. Whether or not a plant species occurs in any given geographical area is directly related to the presence or absence of various pollinator species which are needed to help spread the plant. Biologists who study these plant and animal interactions are extremely concerned that pollinators are losing ground—quite literally—to habitat fragmentation or other changes in land cover. As large expanses of contiguous plant communities are chopped up into smaller and smaller parcels for subdivisions and roads, pollinators are forced to "island hop" from one habitat remnant to another. It is believed that the plant material in these habitats may suffer the consequences of less consistent pollination, and that the animals, which rely on these plants

for food, may be limited in their foraging success. Although honeybees, bumblebees and carpenter bees are strong fliers that will search far and wide for nectar, many of the smaller, native bees tend to have shorter flights, venturing no more than 100 to 200 yards from their nest





Left: A close-up look at various types of pollen.

Below: To successfully reproduce most flowering plants must rely on insects to help carry pollen from one plant to another.

tats are shrinking, too. As the diversity of grass and flower species decreases over time, butterflies and other insects must forage in less than ideal patches.

Mutual Benefits

Many pollinators are adapted to a small range of specific flowering plants, and they key in on attractants like flower color and fragrance. Other pollinators like the honeybee—an exotic species that was introduced to North America from Europe almost 400 years ago—are considered “generalists” because they visit a larger range of plant types and will visit just about any kind of flower. Unfortunately, the honeybee’s high adaptability, superior efficiency and greater numbers enable it to overwhelm smaller, native species through competition. Several studies have suggested that a honeybee colony can displace or outcompete native ants, wasps and bees like the carpenter bee or bumblebee.

Flowers come in a wide array of diverse shapes and sizes, each unique in their presentation of nectar and pollen. As beetles, bees and other insects feed on a flower’s protein-rich pollen or sip its carbohydrate-rich nectar, the unwitting creatures passively transfer pollen from one plant to another. About 80 percent of flowering plants rely on insects to ensure their own reproductive success; the animals transfer pollen from the male organs (stamens) to the female organs (stigma), where flowers and seeds can then develop. In exchange for the insects’ services, the plant imparts a bit of nutrition and protection, and the arrangement is mutually beneficial.

Not only do pollinators take advantage of available food and shelter while exploring every

flower’s nook and cranny, they may also congregate there and “harvest” chemicals from the plant, effectively using the plant as a mating ground. Biologists have observed that in some species, such as the orchid bee, male bees collect the fragrances from flowers and chemically convert them into sex attractants: the bee mixes the scent with its own pheromones in glands on its hindlegs to attract a mate.

Some insects and plants appear to have corresponding characteristics or attributes. For example, butterflies and moths have long, coiled, tubular tongues adapted for probing deep within equally long, narrow floral tubes—such as those of the honeysuckle—that other insects would have trouble reaching. Bees also have highly adapted tongues. Some have short, two-lobed tongues while others have much longer ones. At the end of a bee’s tongue is a spoon-shaped flap designed to lap up nectar wherever





Above: Bees, as well as other insects, use the color and shape of plants to help them when feeding on nectar and pollen. Below: With its long, needle-shaped bill the hummingbird is well suited for locating nectar from deep within flowering plants.

tail marks on flower petals that would otherwise be invisible to us. The marks are directional guideposts which entice the insect to travel down into the flower's reproductive center.

For their part, flowers display many other adaptations or traits that help "match" them to the right insects. Some flowers open only at dusk or at night; these tend to be white or pale green and have a sweet, moderately strong smell, intended to attract hawkmoths and other moths. In contrast, flowers aimed at attracting beetles or carrion flies may open during the day or night and have a strong, unpleasant odor—a smell that mimics decaying protein or other rotten organic matter. Pollen grains, too, show high variability that delivers adaptive advantages. Flowers that are pollinated by bees tend to have pollen grains that are very spiny or bumpy, the better to attach to the insect's body.

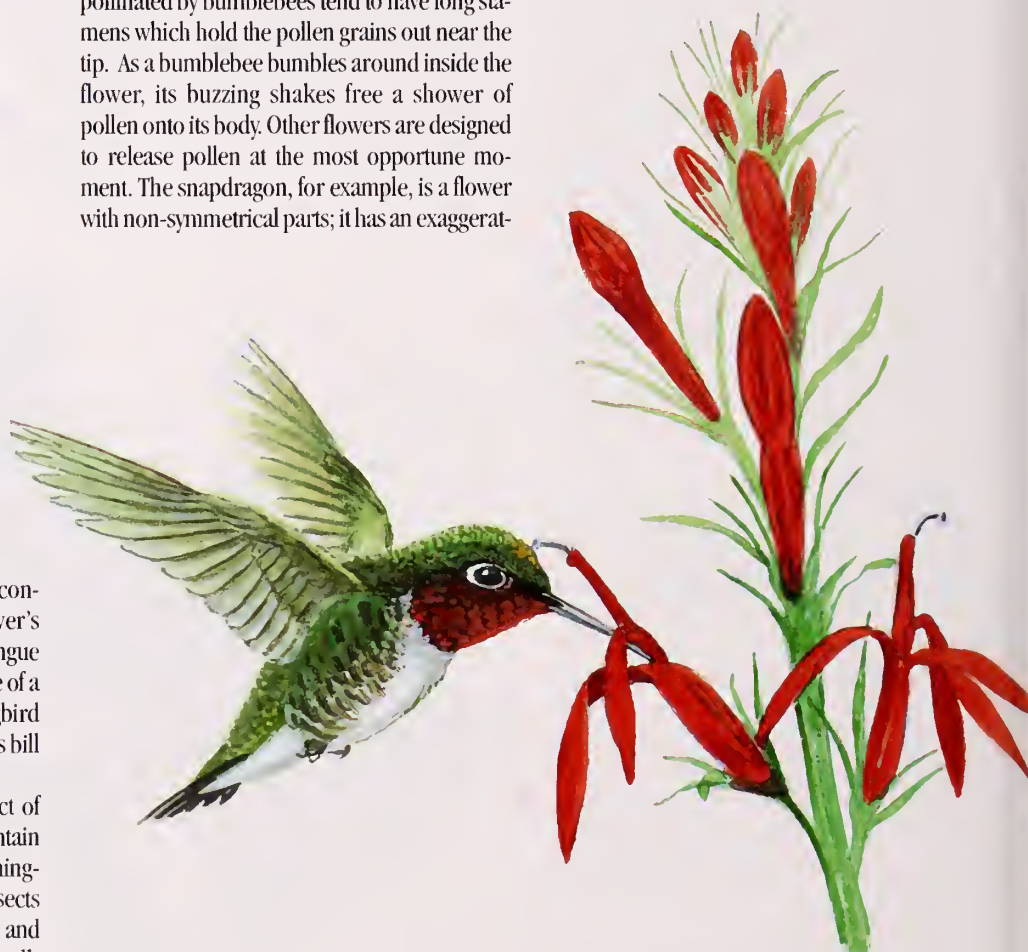
In many cases, plant structure and animal behavior are also linked. Flowers that are best pollinated by bumblebees tend to have long stamens which hold the pollen grains out near the tip. As a bumblebee humbles around inside the flower, its buzzing shakes free a shower of pollen onto its body. Other flowers are designed to release pollen at the most opportune moment. The snapdragon, for example, is a flower with non-symmetrical parts; it has an exaggerat-

ed, protruding lower petal that serves as a landing platform for insects. When a bee lands on this petal, the stamen snaps down from the insect's weight and sprinkles the bee's back with pollen.

All of these plant and animal relationships suggest an intricate web of myriad patterns of interaction that have been going on for millions of years.

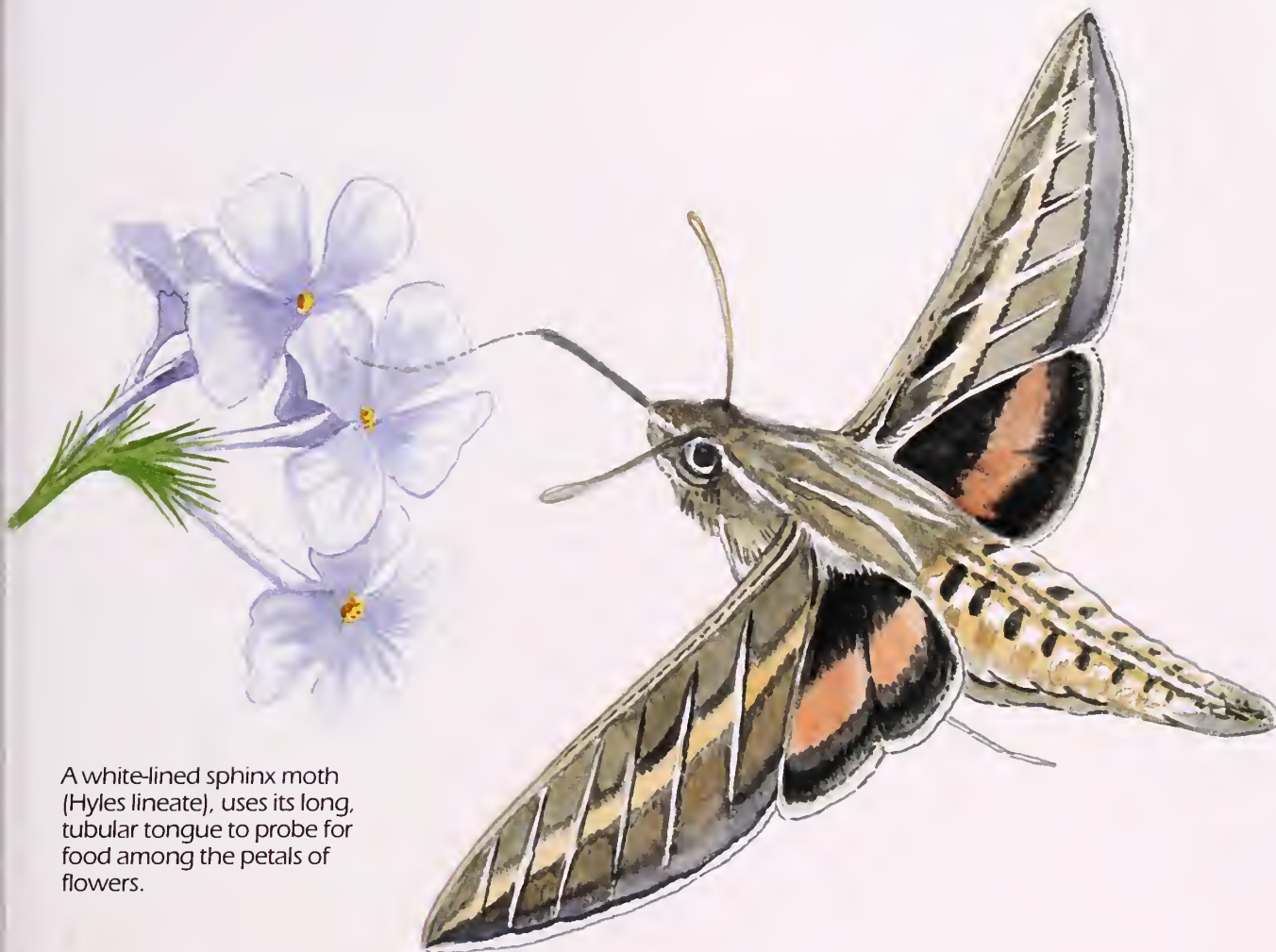
A Hummer of a Bird

One of the most delightful pollinators to visit our gardens in spring and summer is the ruby-throated hummingbird. With its needle-like bill it probes tubular flowers for nectar while hovering on wings that beat 55 times per second. If you hang a nectar feeder by a window for close observation, you can see the bird's pulsing heartbeat, a rapid 615 beats per minute. Hum-



er the liquid might be pooled within the confines of a flower, regardless of the flower's shape. Similarly, a hummingbird's long tongue is well-suited to probe within the long curve of a columbine flower; in return, the hummingbird is benighted with pollen on the feathers of its bill and chin.

Flower color is also a significant aspect of pollination success. Red flowers tend to contain an abundance of nectar; hence the hummingbird is usually attracted to these first. Insects also perceive color differently than we do, and they rely on the ultraviolet spectrum to see tell-



A white-lined sphinx moth (*Hyles lineate*), uses its long, tubular tongue to probe for food among the petals of flowers.

hummingbirds consume 50 percent of their weight in sugar each day, attracted to showy flowers such as cardinal flower, bee balm, trumpetvine, morning glory, azalea, columbine and jewelweed. Hummingbirds also feed on small insects for the protein they provide.

During the hummingbird migration from Central and South America, the sexes travel apart, with the male preceding the female in arrival time. Before leaving the tropics for the long trek across the Gulf of Mexico or northward along the coast, they fatten up on nectar and insects, often doubling their weight. Hummingbirds migrate chiefly or exclusively during the day, arriving in Virginia from the latter end of April until the end of May. However, they do not seem to migrate in relationship to any particular flower blooming times. Once settled into our neighborhoods, the wee birds breed from early May to mid July and lay a clutch of two, tiny white eggs, in two different broods and sometimes three.

The hummingbird's nest is extraordinarily small, about the size of a quarter, covered with moss, lichens and spider webs and lined with the down of thistle or dandelion. This nest is carefully constructed on the horizontal limb of a tree, usually more than six feet off the ground, and sometimes over water.

The sexes remain together for only a few days or until incubation begins. Thereafter the males and females compete for flower sources, intolerant of each other while feeding, aggressively chasing each other with gravity-defying acrobatics. These feisty birds also display aggression towards insects such as bees as well as other birds that may fly through their territory, sometimes chasing them in hot pursuit.

At night, the hummingbird's rapid metabolism slows in response to the cooling temperatures. This type of overnight dormancy is called *torpor* and is not true hibernation, for in the morning the bird resumes its energetic activity upon warming up.

A Pollinator's Garden

If you have a sunny spot in your yard where you'd enjoy seeing a splash of color, consider planting a pollination garden there. Flowers can be planted in patches or drifts to provide food for insect adults as well as cover for overwintering eggs and larvae, especially if the garden is in a sheltered spot out of the wind. Start with tall flowers in the back, such as sunflowers, and a trellis with climbing varieties like trumpetvine or trumpet honeysuckle. Common milkweed and Joe pyeweed will also get tall; you can hide their straggly appearance with bushier plants in front. Choose a variety of flowering types: some with symmetrical rays (petals) like coreopsis, asters and black-eyed Susans; some with irregular shapes like bee balm and goldenrod; and those with shallow blossoms like thistle, knapweed, phlox and yarrow.



There are many things that you can do around your yard to lend a helping hand to our pollinator friends. Providing water, leaving natural areas, and even building nest boxes, like this bee box, will contribute to attracting beneficial insects.

It is best to plant groupings of the same key species in masses by color and type, rather than to plant lone soldiers with the "one of these and one of those" method. Try to pick plants that will bloom in succession, so that there are always some flowers available throughout the growing season. Bees seem to prefer species that are in the blue or yellow color range; hummingbirds seek out red and orange tubular shaped flowers. If you can find them at your local nursery, select native species that would grow naturally in your area, as certain hybrids do not provide pollen or nectar, even though they may have attractive, sweet-smelling flowers. If your propensity is vegetable gardening, certainly cucumbers, squash, tomatoes, melons, beans, peas and other favorites will provide flowers for pollinators, too. Plants like dill, fennel and parsley are needed by butterfly larvae.

Remember to provide water in the form of very shallow dishes or pools, and perhaps a small puddle for bees and wasps that require mud to make their nests. Butterflies prefer moist sand or mud where they can easily land to and sip water; they obtain minerals from these sources also. Find a warm spot in the garden to make a shallow depression, and fill it with wet sand or soil. Another method is to fill an old pie plate with sand and pebbles, then add some water to keep it moist. A piece of fruit laid on top will add a novel source of sugar.

Another option is to build artificial nest boxes for bees and wasps that need small holes to lay their eggs, such as the carpenter bee, mason bee and orchard bee (bumblebees nest in the ground). In general these species do not bother people when left undisturbed, but obviously you would place the bee box far from a deck or patio. Simply drill different sized holes into blocks of pine or other softwood, and secure the blocks onto a tree in the shade (not in direct sunlight), or on a post under a shelter. A good size piece of wood to use is an untreated 6 X 6 or 4 X 4 block of pine about 8 inches long,

with six to 10 holes drilled 4 to 6 inches deep, about 1/2 inch apart, and 1/8 to 3/4 inch in diameter.

Learning More...

Books

The Forgotten Pollinators, by Stephen L. Buchmann and Gary Paul Nabhan; c. 1996, Island Press-Shearwater Books, Washington D.C.; 292 pp.

Pollinator Conservation Handbook: a Guide to Understanding, Protecting, and Providing Habitat for Native Pollinator Insects, by The Xerces Society and Bee Works, c. 2003; 160 pp. (available at www.xerces.org).

Creating a Hummingbird Garden, by Marcus Schneck; c. 1994, Simon & Schuster; 80 pp.

The Hummingbird Garden: Turning Your Garden, Window Box, or Backyard into a Beautiful Home for Hummers, by Mathew Tekulsky; c. 1999, Harvard Common Press; 192 pp.

Web Sites

Hummingbirds
www.hummingbirds.net

North American Butterfly Association
www.naba.org/links.html
Offers basic information and a useful page of butterfly links.

Monarch Watch
www.monarchwatch.org
A national program based at the University of Kansas that tracks monarch migration.

Migratory Pollinators Program
www.desertmuseum.org

The Pollination Home Page
www.pollinator.com ☐

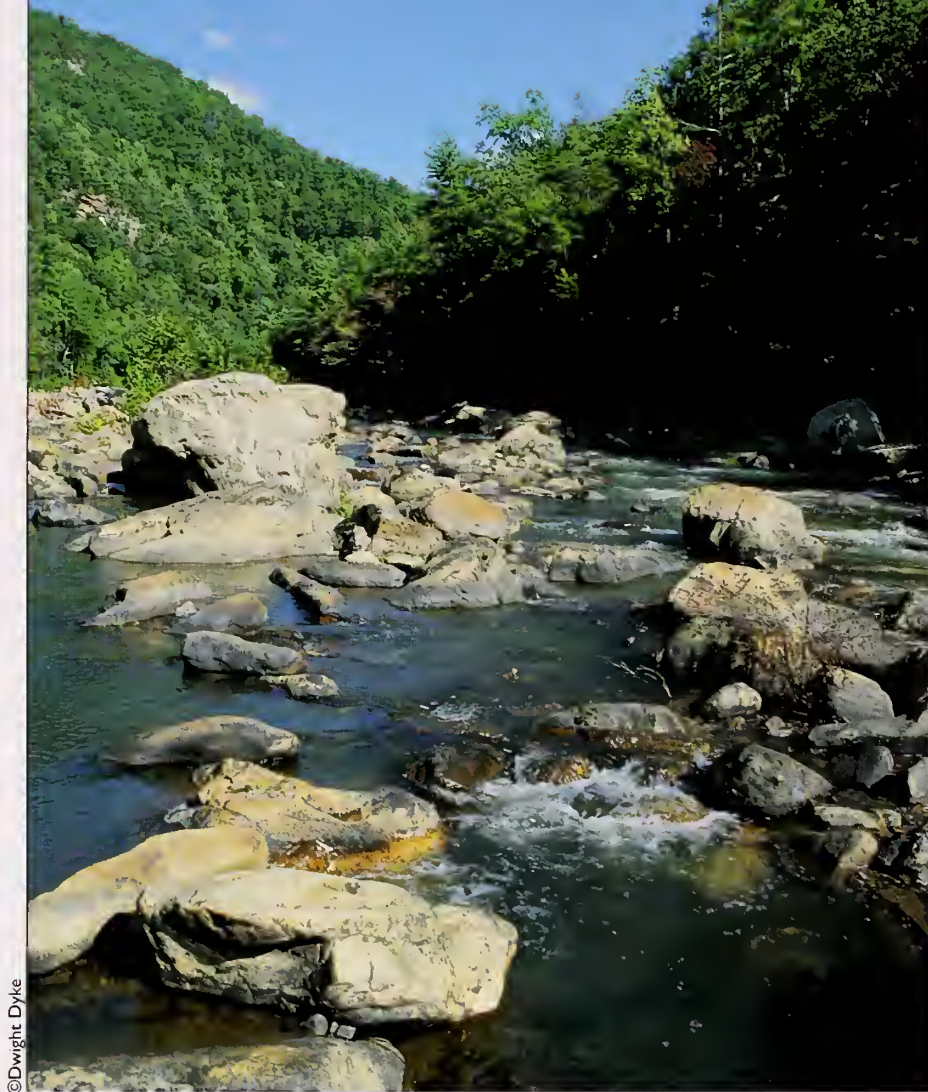
Carol A. Heiser is a Wildlife Habitat Education Coordinator with the Virginia Department of Game and Inland Fisheries.





The Maury River

Forty-two miles of western Virginia boating pleasure
is just a paddle away.



©Dwight Dyke

The upper reaches of the Maury River are swift and very treacherous.

by Bruce Ingram

Like more famous rivers such as the Potomac, Shenandoah, and James, the Maury River has its beginnings in the highlands of Western Virginia. The springs, branches and rills that originate in the mountains eventually form the Calfpas-ture and Little Calfpasture rivers which, in turn, unite to give birth to the Maury near Goshen in Rock-bridge County. Forty-two miles downstream, the Maury finishes its journey when it commingles with the James at Snowden.

Water Quality

Jay Gilliam, the Virginia Save Our Streams (SOS) coordinator—a project of the Virginia Division of the Izaak Walton League, lives near the Maury and is a fan of the waterway.

"I think the Maury's water quality is very good," says Gilliam who dwells in Steeles Tavern. "Historically, the river has had some pollution problems, but those are mostly behind it now. One problem involved the Lexington sewage treatment plant, which had numerous overflows in the past. That plant has now been replaced.

"The other major problem came from Lake Merriweather, an impoundment owned by the Nation's Capitol Area Council of the Boy Scouts of America. The lake was drained to varying degrees every winter and the sediment flushed out, which caused serious sedimentation problems downstream on the Maury. The scouts have different management practices now. Again, the river's water quality is quite good, especially compared to that of other Virginia rivers."

Float Trips

Goshen to Rockbridge Baths

USGS Quad: Goshen.

Distance: 5 miles

Rapids: Class IVs, IIIs, IIIs, and Is.

Access Points: At Goshen, the put-in is on river right at a swinging bridge off Route 39. To reach the take-out at Rockbridge Baths, turn left off Route 39, right before it crosses the river, onto Route 602. A number of road-side pull-offs exist on river right.

Warning: the Goshen junkie is not for floatfishermen, canoeists, or even kayakers/rafters with intermediate skill levels. Bill Tanger, conservation chairman for the Float Fishermen of Virginia (www.floatfishermen.org), details the difficulty of this section.

"I would recommend that only expert rafters or kayakers take the Goshen float," he says. "On this section, I have seen people injured, boats pinned, and one guy even had to be rescued from a mid river boulder. People who like to fish from a boat can not float this section when the water levels are high because of the dangerous rapids. Anglers wouldn't have time to fish anyway because they would have to be making deci-



©Bruce Ingram

The Rockbridge Baths float is one of the most scenic in Virginia.

sions on how to paddle to avoid the boulders. And when the Maury isn't high, the river is too low to float-fish."

Tanger says that the Class IV Devil's Kitchen is the most notorious of the rapids on this excursion. Devil's Kitchen extends for some 100 yards, and the rapid is known for its complexity, huge boulders, and pre-

cipitous drops in the stream bottom. Above Devil's Kitchen lies a Class II-III rock garden, as well as other rapids. Below Devil's Kitchen exists another Class II-III rock garden. Downstream from the rock garden, Laurel Run enters on river right. This is a gorgeous mountain rill that courses out of the Goshen-Little North Mountain WMA, which encompasses much of this section. The infamous Corner Rapid, a Class III-IV, lies below Laurel Run, as does the Class II-III Sliding Rock Rapid, another Class II-III rock garden, the Class II-III Lava Falls, and a host of other major rapids.

During the low water conditions of summer, I have wade-fished parts of the Goshen float and have caught smallmouth bass and rock bass. I have floated the entire length of the Maury River except the Goshen junket, as my paddling skills are woefully lacking to take on whitewater such as exists on this trip. Again, caution is advised.

I have also wade-fished this section for trout. This part of the Maury is listed as a Category A stream, which means it is stocked in each of the following periods: October

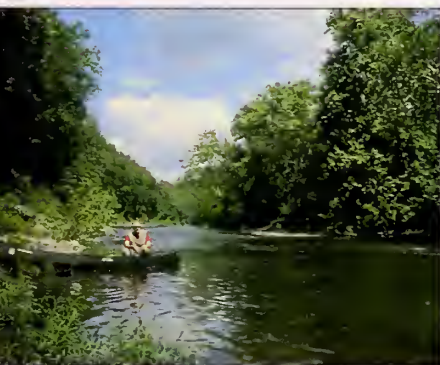
Bridge (Route 622), the take-out is on river left a few yards past the bridge. You will have to haul your boat up a steep, dirt incline marked as a canoe portage. Parking is limited to road-side pull-offs.

If I listed the ten most scenic floats in the Old Dominion, the Rockbridge Baths excursion would definitely be among that elite group. Stunningly beautiful cliffs, heavily wooded shorelines, huge boulders, and splendid isolation characterize this getaway. That said, the Class II and III rapids make this float one for expert paddlers and for those floatfishermen willing to conduct numerous portages. Because of the whitewater, I would suggest that anglers wait until summer before attempting this trip.

Within the first mile come a Class II rock garden and another Class II. The next major rapid is a Class II rock garden that dots the river below where Hayes Creek enters on river left. A Class III ensues downstream from the rock garden and upstream from an island. Class III rapids potentially exist on both sides of that island. I prefer to portage down the left side of the landmass.

Below the island, a Class I-II rapid dots the stream. The next major feature is another island with a shallow right side and a Class II on the left. I suggest portaging down the left side of the island. You will then come to a Class II rapid that metamorphoses near a majestic cliff. This is a must-stop for photographers and anglers. Then ensue a Class I and yet another Class III. Portage the latter on river right.

Thankfully that Class III is the last on the Rockbridge Baths trek, as Class IIs and Is, as well as numerous islands characterize the last few miles. At the end of the float, you will need to take the right side past a group of islands. Then paddle across the river to reach the river left take-out at the Route 622 Bridge.



Water willow beds and Class I and II rapids characterize the Alone Mill to Bean's Bottom junket.

(once), November or December (once), January or February (once), March (twice), April (twice), and May (once).

Rockbridge Baths to Alone Mill

USGS Quads: Goshen, Lexington.

Distance: 8 miles

Rapids: Class IIIs, IIs, and Is.

Access Points: At Alone Mill Road

Alone Mill to Bean's Bottom

USGS Quad: Lexington.

Distance: 5.5 miles

Rapids: Class IIs and Is.

Maury River Information

The *Maury River Atlas* is excellent for planning excursions down the waterway. To purchase a copy, contact VC&NS Sales, Rte. 2, Box 254, Lexington, VA 24450 (540-463-6777; dunoon@intelos.net).

For more information on the Save Our Streams program and how you can participate in it, contact the following Web site: www.vasos.org.



Smallmouth bass are the featured game fish on the Maury River.

Access Points: The take-out is on river left just above the Limekiln Bridge, where Furrs Mills Road (Route 631) crosses. This area is known as Bean's Bottom; parking is limited.

Does any Virginia river sport as many bluffs as the Maury? One such formation greets the paddler at the very beginning of this float on river right and more are to come. The first rapid is a Class I-II that comes near the end of the first mile. After that initial whitewater, water willow beds, riffles, and sporadic Class Is typify the next few miles. Most of this section is classic smallmouth water as eddies, deep-water boulders, and heavily wooded shorelines consistently appear.

Horseshoe Bend, a long river right curve, is the next major feature. Past the halfway point of this bend is

Bean's Bottom



Jordan's Point Park



Ben Salem Wayside

Route 60 Take Out



Glen Maury Park



Locher Landing



Maury River

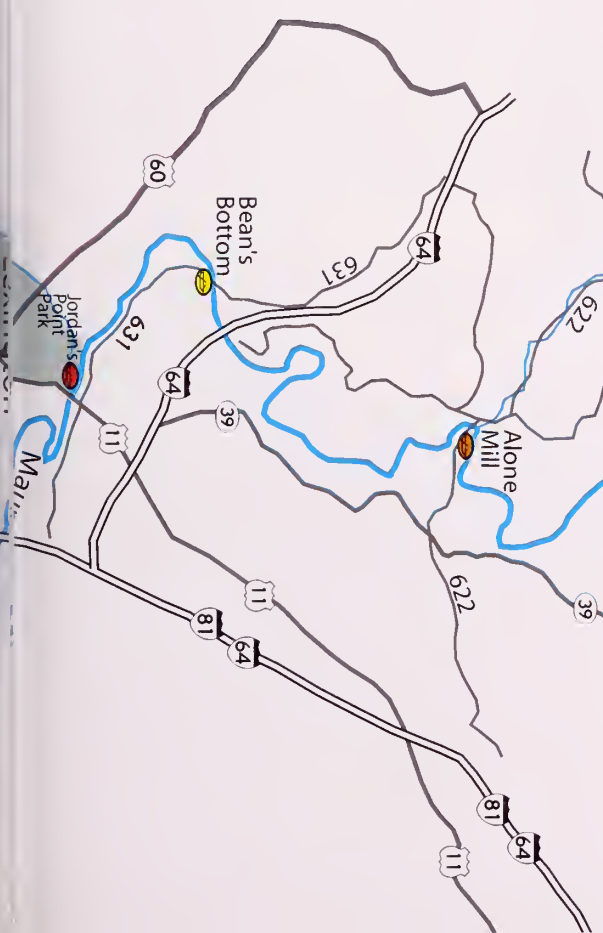
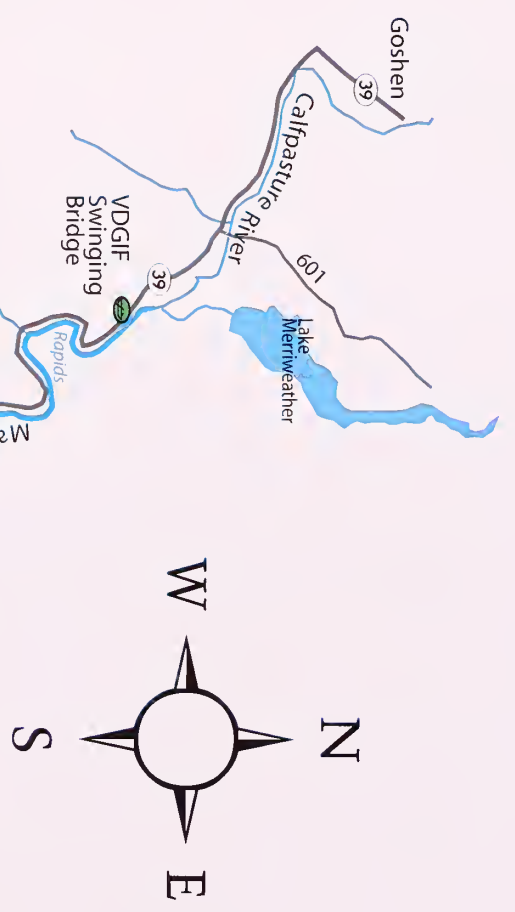
Float Trips



Rockbridge Baths



Alone Mill



an island. Paddle down the right side for the best passageway and be sure to scout out the Class I-II rapid there. A mile or so downstream, Interstate 64 passing over is an unmistakable landmark, as are the rock walls that lie below. Also of note below the I-64 Bridge is an island with a Class II on its left side. I prefer floating down the right side in order to avoid the rapid; however, you may have to drag your boat through the shallow water there.

Bean's Bottom to Jordan's Point Park

USGS Quad: Lexington.

Distance: 2.5 miles

Rapids: Class Is.

Access Points: At Jordan's Point Park just off Route 11, the take-out is on river right just upstream from Lexington Mills Dam and its 10-foot drop. The ramp is concrete, and parking spaces are numerous in the gravel lot.

The first two miles of the Beans Bottom float offers superlative scenery and quality smallmouth sport. An easy Class I rapid to the left of an island is the first landmark. The second is where Whistle Creek enters on river right. The river right rock wall and the water willow beds below Whistle Creek beg to be photographed.

You will then have to negotiate the ruins of two dams: Furrs Mill and Lexington Waterworks. Under normal water conditions, these are Class Is. The last half-mile is the backwater of the dam at Lexington. Jay Gilliam states that this dam serves no purpose; wouldn't it be great for navigation and fishing if this structure could be removed?

Jordan's Point Park to Ben Salem Wayside

USGS Quad: Lexington.

Distance: 6 miles

Rapids: Class IIs and Is.

Access Points: At Jordan's Point Park, the river right put-in is below the dam on the Chessie Nature Trail where Woods Creek enters. You will have to carry your canoe about 100



©Bruce Ingram



©Dwight Dyke

If you enjoy kayaking, canoeing or fishing, the Maury River is well worth visiting.

yards. At Ben Salem Wayside on Route 60, a river right take-out exists. You will have to haul your boat up a short, steep incline. Parking spaces exist.

As its first major feature, which occurs within the first mile, the Jordan's Point float proffers a Class I-II rapid within a river left bend. After mile two comes an island which has a Class II on its left and a Class I on the right. Chittum's Island comes next and is followed by the Interstate

81 Bridge. Be vigilant as you approach the remains of the South River Lock and its Class I-II rapid, which loom after the four-mile-point. The rest of this junket contains Class I rapids and numerous water willow beds. Take out at Ben Salem Wayside to avoid a dam downstream.

Glen Maury Park to Locher Landing

USGS Quads: Glasgow and Snowden.

Distance: 12 miles

Rapids: A Class III, IIs, and Is.

Access Points: At Glen Maury Park in Buena Vista, the river right put-in is off Maury River Road, via Route 745 (Paxton House Drive/Deer Haven Drive), Route 608 (Forge Road) and Route 60. The ramp is a canoe slide, and numerous parking spaces exist. At Glasgow, the river right take-out is just before the Maury enters the James at Locher Landing on Route 684 via Route 130. You will have to haul your boat up a steep bank. Numerous parking spaces exist.

A Class II, several Is, and a very scenic railroad bridge appear on the first mile of the Glen Maury getaway. At the two-mile-marker comes an island with a Class II on its right side; I suggest paddling down the opposite side. Warning: at the five-mile-point, the remains of Goose Neck Dam and its Class III rapid loom. Portage on river left.

Before the halfway point comes a Class I and II rapid—the last major whitewater until the Class II rapid that forms at the confluence with the James. Riffles, Buffalo Creek's entrance at the seven-mile-point, and pastoral scenery are the major features on the second half, as the Maury slows noticeably. The river right take-out is upstream from the aforementioned Class II. □

Bruce Ingram is the author of the following books (cost is in parentheses): The James River Guide (\$15.00), The New River Guide (\$15.00) and The Shenandoah/Rappahannock Rivers Guide (\$18.00). To obtain a copy, send a check to Ingram at P.O. Box 429, Fincastle, VA 24090.



© Larry Ditto

Inquiring Minds Want to Know...

by Gary Norman

*What effect will the new, all day
spring gobbler hunting season
have on Virginia's wild turkey
populations and those who pur-
sue this magnificent game bird?*

H

enry Sullenberger knows spring gobbler hunting. His mastery of the sport began years ago when, as a novice he attended seminars by turkey hunting legends like Jim Clay, Neil Cost, and Ben Rogers Lee. Spring gobbler hunting is a relatively young sport in Virginia, with the first experimental season taking place in 1962. Henry was there in those early years applying the knowledge of the hunting experts he admired and gaining an education at the "hands" of Virginia longbeard turkeys. After many years of trial and error he connected with his first trophy bird in 1970, and has since enjoyed many successful years of turkey hunting. More importantly however, Henry has moved beyond the level of hunting expert to a status where he seeks to know more about the biology and ecology of the bird he loves so well. There is a wealth of information available to novice hunters these days on the subject of becoming a successful turkey hunter. Magazines, books and videos abound on "how to" become a turkey hunter. However, the information Henry strives to find, the



Henry Sullenberger assists with Department research efforts to capture and place radio transmitters on gobblers as part of a new study to investigate survival and gobbling.

"whys" of turkey hunting, isn't as readily available. A member of The National Wild Turkey Federation (NWTf) since 1974, Henry has found some useful information in the NWTf magazine *Turkey Call*. Dr. James Earl Kennamer's "Biologically Speaking" column in *Turkey Call* is particularly helpful with information on turkey conservation and management.

As Wild Turkey Project Leader for the Virginia Department of Game and Inland Fisheries, I love interacting with Henry and others like him

I've met and come to know because of their enthusiasm for knowledge about wild turkey conservation and management. I particularly enjoy their questions because they're tough and insightful. Often I feel disappointed when I don't have the answer for their question, but unfortunately there's much knowledge about the bird that's simply not known. On the positive side, however, Virginia has been a leader in wild turkey research over the past decade and we can now answer more of those difficult questions.

Many of my interactions with Henry and others deal with how we set turkey hunting regulations. Two of the most common questions deal with spring seasons, those being: (1) Gobbling was better before the season, why can't we start the season earlier? and (2) Other states have all-day spring seasons, why not Virginia? While season setting is a complex task, one that Department Director William Woodfin says is a combination of tradition, public opinion, and biology, my answers here deal explicitly with important, but often under-reported, biological considerations.

Timing of Spring Seasons

For Henry and many other turkey hunters, preparation for the spring season begins with pre-season scouting, primarily listening at day-break for the booming gobble of an adult male or "Tom." Department surveys have found that hearing gobblers is one of the most important aspects of satisfaction in their hunts, so timing of the season to coincide with peak gobbling is a primary consideration. But, we often hear that the season was too late, that gobbling was better before the season opened. A common suggestion from many spring hunters is that the season should come in earlier to take advantage of the pre-season gob-

blers across the country that there are two peaks in gobbling in the spring. The first peak is believed to take place in late March or early April as males begin to establish territories and compete for females. The timing of this first peak is one of the unknowns in Virginia, as we simply don't have early spring gobbling data. However, we do have very interesting gobbling data throughout April and May from 1958 through 1961, the period just before we opened spring hunting. These historical data provides a valuable insight into gobbling patterns in the absence of hunting. Results from those studies suggest that peak gobbling in Virginia occurs in early May. Henry and most avid spring gobbler hunters would quiet-

ly disagree and point out that they typically hear more gobblers in early April. Data from annual Department surveys of spring gobbler hunters often supports Henry's contention and shows that gobbling typically declines steadily through the season. Clearly the historical and current patterns don't agree. The reason for the difference could be the impact of hunting. Research in Iowa has found that hunting pressure (calling, flushing, shooting, etc.) can reduce gobbling rates. In addition, it is likely that the most vocal gobblers may be more vulnerable to hunting and harvested early in the season. Generally, more than 50 percent of the turkey harvest comes by the first week of the season. So it seems likely that gobbling will decline after the

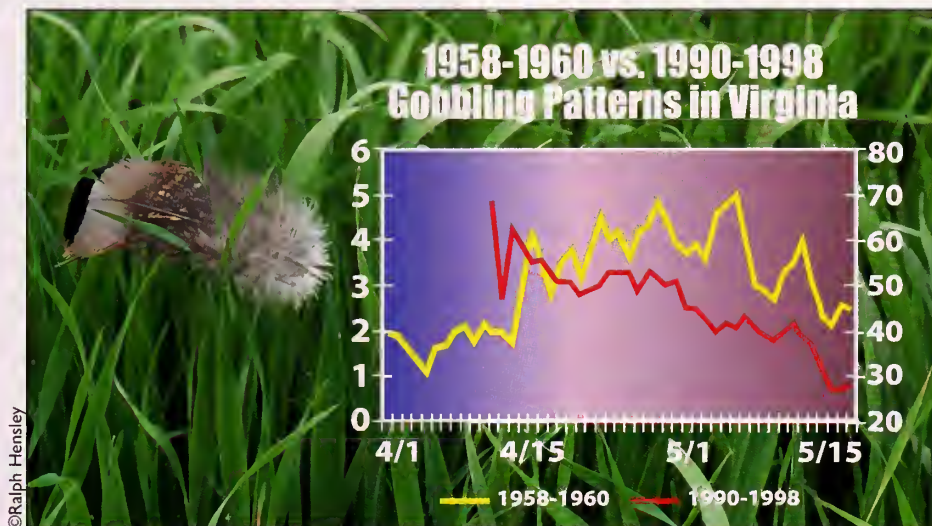


©Scotty Lovett

bling. After all, most states to the south start before us!

From a biological perspective the best time to open the season is during the second peak of gobbling which typically coincides with peak nest incubation. This timing should provide quality hunting opportunities for hunters while maximizing protection of hens from hunting. It is widely held by biologists and

Studies show that hunters typically harvest more than 50 percent of their gobblers during the first week of the season.



©Ralph Hensley



first week of the season, regardless of timing of the season.

Admittedly things may have changed since 1958-61, when the Department first concluded that the second peak of gobbling was in early May. Turkey populations have increased dramatically and today's (surviving) gobblers are likely to be "educated" to hunting. Another track to take with this question of the timing of spring reproduction is to examine the chronology of nesting. Department research using radio-marked hens found that nest incubation also peaks in early May. This timing coincides with the historical gobbling dates and suggests that gobbling would ordinarily take place in late April or early May, if not for the impact of hunting.

While timing the season to capture peak gobbling is important, the effects of season timing on illegal hen kill are equally important. From Department research we have found a 6 percent illegal mortality rate during the spring season. Most of the poaching took place in early April, before hens began incubating nests. Moving the season any earlier would likely increase this illegal mortality rate, as hens are likely to be with gobblers. Henry correctly points out that many states start their seasons earlier and asks "What's the impact of illegal hen kill in these states, they seem to have as many or more birds as we do"? A

good point, and the difference is most states to our south do not have fall seasons. These states can afford higher illegal spring kills that may be expected with earlier spring seasons. By offering both fall and spring seasons we need to be cautious about any additional hunting related mortality that would influence population growth rates and densities.

A comment often offered by Tidewater and eastern Piedmont Region hunters is that spring comes earlier in eastern Virginia and the season should be moved earlier to serve their climate. While there are obvious differences in the timing of spring green-up among physiographic regions of Virginia, we found no difference in the timing of nesting between radio-marked hens in eastern and western Virginia. Results of our Spring Gobbler Survey also suggest little difference in gobbling trends among the regions. Currently the spring season begins on the second Saturday in April, which coincides with egg laying. Additionally, our season is 5-weeks in length, which is intended to accommodate those years when spring is early or late depending on winter weather conditions.

An all-to-often remark I hear from

frustrated spring hunters during the early part of our season is that gobblers are "henned-up." This situation, where gobblers and hens are still together, makes for difficult hunting. Gobblers with hens tend to gobble less and are generally more difficult to call into gun range. Additionally, these circumstances add risk to hens that can be mistaken for gobblers and killed accidentally or inadvertently. These circumstances are alleviated with time as hens leave gobblers to begin egg laying around mid-April. As April progresses hens spend less time with gobblers and by early May most should be incubating nests. There are exceptions as some hens tend to nest later or not at all. Additionally, some females may return to gobblers if their first nest is disrupted. But in general, earlier seasons would probably only add further consternation to the problem of "too many hens."

Lastly, one of the more insightful remarks and comments I've heard from Henry was related to changes in spring gobbler hunting over the past 30 short years. Henry contends that turkeys used to be easier to kill. Granted it took some years of trial and error to become proficient, but



I've heard this remark from other experienced hunters like Jim Clay of Perfection Calls in Winchester. Both Henry and Jim feel that spring gobbler hunting has gotten tougher. From a biological perspective I've wondered how this could be happening? Certainly we have more turkey hunters and more turkeys today. Additionally, I've wondered about the impacts of genetic selection hunters may be having on the population. After all, as hunters we're typically harvesting gobbling males that come to hen calls. If these traits are inherited then it stands that we're constantly selecting against gobbling and for those birds that don't gobble as well nor come to calls. This is another arena where we don't really know what is happening. But this selection seems possible and the situation would be magnified even more with earlier seasons.

All-Day Spring Gobbler Hunting

In a recent spring hunting trip to Florida, Henry was able to hunt all-day and wondered why not in Virginia? After all, most states (30) offer all-day spring gobbler seasons and their populations are doing well.



The answer is another complex one that deals with potential impacts on gobblers and hens alike. First, there are fundamental differences in wild turkey harvest management among different regions of the country. Virginia and a host of mostly Northeastern states offer both fall and spring hunting, which tends to maximize total harvests. Fall seasons have been found to be additive to female mortality, which means that either-sex fall harvests have the potential to reduce survival rates. The effects of liberal fall seasons and over-harvests are manifested in lower populations and wide fluctuations in harvests. Results of a long-term study of hen survival in Virginia were used to adjust our fall seasons to a level that should safeguard against over-harvest. However, environmental conditions and oak mast may also influence turkey population levels. But in general, most of the states that have all-day hunting don't offer any fall hunting seasons and can afford the potential impacts of the additional (all-day) hunting pressure.

Results of a banding study of gobblers in Virginia suggest that survival rates of our birds is very low compared to other states. Typically, about 40 to 60 percent of the male turkey population survives from year to year in other states. Generally adult males suffer high mortality rates during the spring season and their survival is typically lower than juvenile birds. However, our results found comparably low survival rates, 22 percent for juveniles and 31 percent for adults. The lower juvenile survival rates in Virginia are likely the result of additional harvests from the fall season. In general, we're aggressively harvesting our male population and further expansion of the spring season with all-day hunting could begin to impact the quality of spring hunting in the future. The amount of pressure from all-day hunting is difficult to predict. Other states have found that most hunters (60 to 70 percent) take advantage of afternoon hunting. The afternoon hunting effort typically accounts for 15 to 25 percent of the

harvests in states with all-day hunting. It is difficult to determine the additive effects of these harvests because some birds that were killed in the afternoon could have been taken in the mornings later in the season. But, biologists in those states with all-day hunting believe it adds 10 to 15 percent to their spring harvest.

All-day hunting also has the potential to impact females as well. As previously mentioned, we already have a 6 percent illegal mortality rate on females during the spring season; additional hunting time would likely increase that figure. There is also some concern for additional impacts of flushing hens off nests with all-day hunting. We estimate that one hen is flushed for every 100 spring hunts. Additional hunting hours will likely increase these effects and could impact local turkey densities where hunting pressure is high.

On the positive side, all-day hunting would offer additional hunting opportunities for many hunters after work and school. As a compromise to balance the potential negative biological impacts for all-day hunting and positive hunting opportunities it presents, the Department's Board of Directors recently passed a unique spring season structure that provides for all-day hunting during the last two weeks of the season. This season structure should significantly reduce the potential negative impacts of all-day hunting by timing the season to coincide with peak nest incubation. Moreover, this new season will provide new opportunities, particularly for young hunters.

For Henry and others with like inquiring minds, these turkey regulations make biological sense. Now if he can just find that secret call he'll be completely satisfied. □

Gary Norman is a wildlife biologist for the Virginia Department of Game and Inland Fisheries and Upland Game Bird Project Leader.

Hunters interested in joining the Department's Spring Gobbler Hunter Survey can contact Gary Norman at VDGIF, P.O. Box 996, Verona, VA 24482 or normang@dgif.state.va.us



A Multi-Species Mecca

by Marc N. McGlade

Sometimes the best presents come in little packages. That may be true. However, for Old Dominion anglers, the best is the biggest when it comes to lake size. Buggs Island Lake is one of the South's premier destinations for many types of angling, water skiing, camping and more. Nestled smack-dab between Petersburg and Raleigh, North Carolina, Buggs Island attracts many anglers in this outdoors-rich corridor.

Its 800 shoreline miles and nearly 50,000 surface acres certainly make it huge. Many of Buggs Island's creeks

Southside's Buggs Island Lake is one-stop shopping for anglers.

cover more surface acreage than many other Virginia lakes' total size. It can be intimidating, no doubt, but also very rewarding.

Two Virginia rivers form Buggs Island Lake: the Roanoke (Staunton) and the Dan. At their confluence lies Staunton River State Park, due east of South Boston.

The quaint Town of Clarksville is the only incorporated town located on the lake. Buggs Island lies pre-

dominately in Mecklenburg County in Southside and is Virginia's largest lake, by far. Part of the lake, approximately 25 percent, is located in North Carolina straddling Granville, Vance and Warren counties. North Carolinians refer to Buggs as Kerr Reservoir, named after John H. Kerr, that state's congressman, who was the project's main booster. The land was acquired in the 1940s and was impounded and filled by the U.S. Army Corps of Engineers in 1952. Back then, Buggs was a dual-purpose project providing flood control downstream and hydroelectric power, which was sold to local power companies. Today it still serves those original purposes,

and also provides water supply to communities, recreation, state parks, camping and enables Commonwealth and Tar Heel anglers to experience exceptional fishing.

Buggs Island is owned by the U.S. Army Corps of Engineers and is managed by same and their multiple partners, including Virginia Department of Game and Inland Fisheries, Virginia State Parks, North Carolina State Parks, North Carolina Wildlife Resources Commission, and others.

Ask most anglers about Buggs Island, and you'll likely hear about the bass fishing. Professional bass fisherman, David Fritts from Lexington, N.C., contends that Buggs is the best bass fishing lake in Virginia and the Carolinas. Indeed, Buggs Island Lake is much ado about bass fishing, and rightfully so. However, if you think of this sprawling body of water as only a bass lake, you are missing a tremendous opportunity at crappie, catfish, striper, gar, white bass, bream and white perch, too.

A Region Heavily Connected To a Lake

"We work hard to bring tourism to Mecklenburg County from early March through November," says Frank Malone, executive director with the South Hill Chamber of Commerce. "We're very proud of the lake country and the tourism it brings."

The mission statement of the Clarksville Lake Country Chamber of Commerce—a neighboring chamber of commerce to South Hill—says it all: To enhance small-town atmosphere while promoting economic growth without compromising our natural resources.

This portion of Southside relies heavily upon its fishing friends. Bass, striper, crappie and catfish tournaments bring in a slew of anglers from states as far north as Maine. Occasionally, there are even white perch derbies held here. Buggs is so big it draws the attention of many Yankee anglers, since many northern states can't hold large tournaments on their smaller lakes and rivers.

"Mecklenburg County brings in \$79 million annually in tourism money, over half from anglers or folks using our waterways," Malone adds. "We're trying to cultivate the third 'T' here. We already have tobacco and textiles and we're trying to focus on bringing more tourism to our area. Besides the fishing, there's great hunting here, too."

Many folks see the allure of Southside. Each year more and more people purchase weekend getaway homes, retirement homes or vacant lots. The beautiful rolling countryside and the spectacular bursting sunrises and sunsets keep visitors coming back for more.



©Dwight Dyke

The Residents

Buggs Island has something for practically every angler. Anglers can target multiple species, and trophies of all species abound. If there were a frustration with this exceptional lake, it would be the oddity of its water level fluctuations. During a typical rainy Virginia spring, the boat ramps and parking lots will likely be under water at some point. Normal pool is 300 feet above sea level; 320 feet reaches the top of the crest gates. Some campgrounds and ramps will close if water levels reach or exceed about 307 feet.

Striped bass are one of the inhabitants that make this lake so special. Like a linebacker at an all-you-can-eat buffet, Buggs' stripers pounce on everything in their way leaving very little in their wakes. They have an assortment of meals to order from the daily menu: gizzard and threadfin shad, alewives and blueback herring.



©Marc N. McGlade

Above: The water level at Buggs Island Lake can change dramatically throughout the year. When water levels move up into the bushes and the trees (opposite page) fishing for largemouth bass can be exceptional, as Richmond native Roger Jones shows.



Left: A basic assortment of lures will do just fine for Buggs Island bass. Known nationally for its excellent bass fishing, the lake draws major fishing tournaments from around the country. Below: With 800 miles of shoreline, anglers and boaters will have no problem in finding first-class launching facilities.



"Buggs is one of a few lakes in the U.S. where striped bass successfully spawn," says Vic DiCenzo, a fisheries biologist with the Department.

However, due to recent poor spawns, the Department is now stocking 350,000 stripers annually and they monitor its effectiveness, which should help stabilize recruitment and increase abundance.

Buggs' linesiders average 20 inches in length by age 2½; 5-year-olds average 28 inches. DiCenzo says the top-end range for Buggs' stripers is approximately 38 to 40 inches, or in the 18- to 20-pound class, although anglers have caught larger ones.

Buggs, like most big lakes, has a diverse size range for stripers, and different parts of the lake are better at certain times of the year, particularly for big fish.

"The most productive areas are up lake in the spring because of the spawning run," DiCenzo says. "In the summer, the dam up to Buoy 10 is good, and I recommend keying on the thermocline. During the fall and winter, try from Goats Island to Clarksville."

DiCenzo believes the stripers should do well in years to come. "From our perspective, the future is bright for the striper fishery," he says. "We are optimistic that stocking will help offset the recent poor spawns. As striped bass abundance improves, we fully expect to see angler effort, catch and harvest increase."

Largemouth bass and Buggs Island go hand in hand like RC Cola and a Moon Pie. Virginia's largest lake is a tournament destination for

local, regional and national bass circuits because of its size and tendency to produce limits. If you're seeking a 10-pounder, this isn't the destination, but for sheer numbers of 2- to 6-pound bass—with an occasional lunker thrown in for good measure—it's the best in the state.

Largemouths eat the same morsels the stripers do: gizzard and threadfin shad, alewives and blueback herring. With options like that, it's no wonder these bass sport round bellies.

When high water in springtime inundates the willow and sweet gum trees, the bass fishing can be nothing short of phenomenal. Pitching and flipping plastic worms, lizards and jigs into the flooded brush is a tactic that has paid off for years. Don't leave home without a

stash of spinnerbaits, crankbaits, floating worms and jerkbaits, either.

Angling for catfish at Buggs is gaining popularity among whisker diehards; perhaps a surprise to some of you, but not to the biologists.

"In our 2001 creel survey we found 15 percent of anglers were strictly targeting catfish—blue, channel and flatheads," DiCenzo says. Monster-size blue and flathead cats have topped 30, 40, 50, even 60 pounds. "Who would have thought any place in the state could rival the

James River for catfish popularity," he adds. "Catfishing here is very popular today, and for good reason." The great bass fishing on Buggs is no secret; nor is angling for blues and flatheads, now that word has seeped out. The blue cats first appeared in Department studies back in the early 1990s.

"We saw a significant and dramatic increase in blue catfish numbers back in 1997," says Dan Wilson, a Department biologist. Blue catfish swam into Department sampling

nets during a standard sampling trip for stripers, which astonished the biologists. In 1997, the Department recorded a large number of blue cats in their nets, but then they doubled in 1998!

In August 1999, the Department was sampling for forage (gizzard shad, threadfin shad, alewives and

Lower left: This is the Clarksville Bridge (Route 58) as it spans Buggs Island Lake. Fishing in this general area is excellent for numerous fish species, including striped bass.



For Information

- South Hill Chamber of Commerce – phone – (800) 524-4347, e-mail – shchamber@meckcom.net, Web site – www.southhillchamber.com.
- Clarksville Lake Country Chamber of Commerce – phone (800) 557-5582, e-mail – clarksville@kerrlake.com, Web site – www.clarksvilleva.org.
- GMCO produces the Pro Series Map of Kerr Reservoir (Buggs Island Lake); contact them by phone at (888) 420-6277, by e-mail at gmcomaps@erols.com or visit their Web site online at www.gmcomapsandcharts.com.
- For questions concerning the Buggs Island fishery, contact the Department at (434) 392-9645, or go online at www.dgif.virginia.gov.
- Buggs Island Lake facilities information line – phone (434) 738-6143.
- Buggs Island Lake level recording – phone (434) 738-6371.
- To make camping reservations, call (877) 444-6777.
- Virginia State Parks – www.dcr.state.va.us/parks.
- North Carolina State Parks – www.ils.unc.edu/parkproject/ncparks.html.
- General Buggs Island information – Web site www.kerrlake.com.
- Buggs Island Lake has numerous public and private launch facilities. The public ramps are open year-round, barring high water.
- Virginia and North Carolina have a reciprocal license agreement so that either state's freshwater fishing license is legal regardless of the section of lake you target.
- Refer to the 2004 Virginia Freshwater Fishing Regulations for the latest and most up-to-date fishing regulations on Buggs Island Lake.

blueback herring) and couldn't keep catfish out of the nets. Most were on the small side, but the numbers were staggering. They conducted their sampling over the entire lake, and the best concentrations were upstream of Clarksville. Their gear didn't collect large fish due to the limitations of the equipment.

"Don't think for one minute there aren't big cats in Buggs," Wilson adds. "There's enough big fish to really spark interest." With the menu of forage available, it's to no one's surprise that they're reproducing and growing so fast.

Cut bait such as herring, mussels or clams work well for blue cats; flatheads prefer live bream. Both species will ransack other live baits, including threadfin shad, white perch or suckers.

There is a fascinating fishery below the John H. Kerr Dam, as well. This tailrace teems with many species, particularly during the spring. Most people consider the tailrace section to be from the base of the dam downstream to the Route 1 Bridge (Steel Bridge). Quality wall-eye fishing exists from February to early April. Stripers are best from late March through mid-May. Catfish are essentially a year-round deal below the dam, although midsummer is the toughest time to fish here because of low oxygen levels.



©Dwight Dyke

For bank fishing opportunities visit one of the many campgrounds found around Buggs Island Lake.

As for crappies (black and white)—or speckles—Buggs is the best lake in the state, both for numbers and size. Buffalo, Grassy, Blue-stone and Butcher creeks are very productive for crappies. Good lure selections are marabou crappie jigs, tube jigs and tiny jigging spoons. Live minnows fished underneath a slip cork will catch a mess of these tasty fish, particularly from sunken brush piles or beaver huts.

DiCenzo says Buggs is one of the

best crappie destinations east of the Mississippi. "It's outstanding from March through October," he says. "To have an excellent population of both quantity and quality crappies makes us very fortunate."

Other Activities

Camping is extremely popular at Buggs Island. Some campgrounds are equipped with electricity and running water for campers. Some have bathhouses, showers, grills, etc. Some of these locations even have boat ramps available for those who trailer their boats.

Water skiing and hot-air ballooning also have a following, particularly during the annual Virginia Lake Festival, held each year in Clarksville during the summertime.

Being such a big lake, sailboats abound, too. In fact, Buggs Island is dotted with a few sailboat marinas.

Come visit Southside's jewel this year. If you haven't been here before, you owe it to yourself to come see what the hubbub is about. Buggs Island beckons the outdoors enthusiast to pay a visit; there is so much to see and do you'll want to come back again and again. □

Marc McGlade is a frequent contributor to Virginia Wildlife. He's a writer, photographer, fishing instructor and lecturer, residing in Midlothian, Va.



©Dwight Dyke

Along with superb catfish, striped bass and bass fishing, Buggs Island Lake is known as one of the best places in the state to catch big crappie.



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Journal

2004 Outdoor Calendar of Events

August 20–22: *Mother Daughter Outdoors Event*, Appomattox. An educational opportunity for women 9 and older to learn skills for outdoor pursuits. For more information call 804-367-0656 or visit our Web site at www.dgif.virginia.gov/events/index.html.

September 17–19: *Virginia Outdoor Weekend*, Westmoreland State Park. A program designed to give the entire family a chance to add to their outdoor experience. Activities include: canoeing, fishing, outdoor photography, archery, skeet shooting, wilderness survival and much more. For more information call (804) 367-0656 or visit our Web site at www.dgif.virginia.gov/events/index.html. □



Duck!

by Jennifer Worrell

Lieutenant Ben Lewis remembers a strange retribution one night while watching some shady wood duck hunters shooting on a posted marsh. Lewis and his partner were hiding nearby and counted 200 shots after legal shooting time. The wood ducks were flying in droves, but it was so dark at that point that the hunting dogs had stopped retrieving the felled birds. As the officers announced their presence and moved

to arrest the violators, they heard a loud, "THWACK!" and a yelp from one of the hunters.

As Lewis approached, one of the men was holding the side of his head and moaning in pain. Nearby lay an equally stunned duck—during the apparent feeding frenzy, the bird had crash-landed into the hunter's head. This score for the ducks seems a small price for such an illegal and wasteful waterfowl harvest! □

Youth Writing Contest Is Something to Gobble About

If you live in Virginia and are 17 years of age and younger you are eligible to enter the 2nd Annual Youth Hunting Essay Contest held by the Virginia State Chapter of the National Wild Turkey Federation. To enter this year's contest send a picture along with your story of "The Hunt." Include in the story who or what inspired the interest for the hunt. Has your interest been inspired by a JAKES event, 4-H shooting event, or any other type of hunting and shooting event? Please include any information about the hunt that made it special (Example: granddad's gun). The story can include more than a single hunt. The story of "The Hunt" does not have to include the harvesting of any game. Entries must be post marked by May 31, 2004. Send entries to: William Hall, 1626 Jacktown Rd., Lexington, VA 24450 or call 540-463-5410.

The winners of last year's First Annual Youth Hunting Essay Contest were Lauren Bennett, of Tazewell, who took first place and was given a Virginia lifetime hunt-

ing license; Cody McCune, of Amherst and Sarah Thurman, of Rocky Mount.

The Hunt

by Lauren Bennett

"The Hunt," oh what memories fill my head with the thoughts of my first wild turkey hunting experience! First, let me start back where and when I became interested in hunting as an outdoor sport.

My uncle, John Blankenship, our local 4-H Agent, received some information from Virginia Tech on "Shooting Education." He was very excited since he was an avid outdoorsman and wanted to share his hobby with other children such as I. John talked with my parents and me about this program and the importance placed on the safety of handling a firearm. Each week in the spring, we would meet at Triangle Gun Club, a local firing range, to practice our marksmanship. The highlight of the 4-H program was to compete in early fall, where I went with my fellow 4-H'ers to participate in a state 4-H Shooting Tournament in Appomattox, Virginia.

After the competition, John invited me to become a member of "JAKES," a youth organization within the National Wild Turkey Federation. I attended the local Annual Dinner meeting and entered my name in the raffle for a 243-caliber rifle I enjoyed a delicious wild turkey meal. At the conclusion of the dinner meeting, it was the big moment when a name would be drawn to win the JAKES rifle. I waited with my chest pounding as my palms could feel that little rifle lying in my hands. I wanted to win that gun so bad. See, I had been borrowing my grandfather's gun to hunt for whitetail deer last hunting season. The thoughts of winning and owning my own 243-caliber rifle was

more than a young girl, like myself, could take. Mr. Breeding plunged his hand deep into the bag of countless numbers of tickets as he swirled them in a circular motion. Out his fingers brought a name. "Laur---ene Bennett?," he stuttered as I gasped with excitement! Did I really hear him right? Sure enough! He called my name out again as I proudly walked to the front of the group. I was so proud of my new rifle and one with an original JAKES insignia. I was now ready for my first wild turkey season.

It's a cool and foggy Thanksgiving morning. "Brr-rr-ii-nn---gg," sounded my alarm. I wipe my eyes scurry down from my loft. I don my hunting gear including an orange vest and hat. The excitement of a harvest fills me as I eat a hot bowl of oatmeal and honey. I have made preparations to go hunting with my uncle, grandfather and my dad. After slinging my 243-caliber rifle over my shoulder, we took off together to stake out prime hunting area and to settle in for a day in the outdoors. I sat patiently as the sun began to rise over the Appalachian Mountains for just a glimpse of a buck deer. After several hours, the urge for an early morning nap was far greater than my desire to harvest a prize buck. I slumped over and slowly snuggled up to a large rough barked oak tree. In just moments, I was sound asleep, dreaming of that buck gallantly strutting through the forest in search of a doe. "Ca-pow!" my uncle's gun fires as I awaken startled and unaware that I had been asleep. John calls to us, using our two-way radios, that he has killed a spike buck. In excitement, I rise to my feet and radio to him that I will be approaching him from the north side of the mountain and to cease-fire. My uncle's persistence paid off, while mine landed me a good 'ole nap.

After the Thanksgiving feast with family and friends and another needed catnap, we suited up once again. As we were traveling back to our prime hunting territory my grandfather pointed out to me a couple of wild turkey hens scratching for food on the hill side. He stopped and urged me to shoot one; since Thanksgiving Day is the only day a wild turkey can be harvested. In a nervous panic, I insisted that he take aim and shoot. My heart was keeping in time with the heart of a

marathon runner. "Ca-pow!" Pa-Paw's rifle sounded. I slowly released the tension in my eyes to see that his aim was right on. "Wait look here," he whispered in a quiet voice. More turkeys were feeding on grubs and insects. "Lauren, steady yourself and I will walk you through this." He whispered. I took a deep hesitating breath and decided that this was going to be my shot. I slowly raised my gun, positioning my sweaty fingers just as I had been taught in my 4-H shooting club. I leaned my right cheek over to the stock of my gun as I batted my eyes to clear them from a nervous haze. "There it is!", I exclaimed in a quiet, yet excited voice. "Remember to take your gun off safety and don't forget your follow through," Pa-Paw reminded me. I blinked my eyes once more and focused the cross hairs on the turkey. Now let me remind you, this is my first real hunt. I slowly tensed my hand and began to pull the trigger. My grandfather looks on through a set of field binoculars. "Ca-pow!" I quickly raised my eyes from the scope as Pa-Paw raised his eyes from his binoculars. "I got it! I got it!" I exclaimed in a loud voice. I was so proud of myself for executing my hunting skills. "What were you shooting at, Lauren?" Pa-Paw asked me in disgust. "That turkey under that briar to the left of the sapling," I replied. "That one?" he asked out of curiosity. "Yeah! And it only took me one shot. I'm a good aim aren't I?" I asked. "Lauren that was the one I just killed" he said. "Oh!" I replied slightly embarrassed. I could not believe that I had just shot at a perfectly deceased turkey. We both began to laugh hysterically.

Reality was beginning to set in and I was becoming aware that I was going to be the talk over the Thanksgiving leftovers. Shaking my head as if this could not be true we rounded the ridge when another flock of turkey were feeding. "Lauren, here is your other chance to redeem yourself," Pa-Paw whispered. Once again I picked up my gun. Determination was the key word at this point. I was not going to shoot unless there was movement in the lenses of my scope. I positioned my rifle over a large rock. In my head I could hear Pa-Paw saying those previous words... Safety, Aim and Follow through. I aimed with the cross hairs

perfectly crossed over the turkey's twitching head. "Ca-pow!" Suddenly the once still turkey began to flip and flop first right then left, end over end, until he lay dead. "I hit it!" I squalled in excitement over the radios. "Let's go," Pa-Paw said as we fled from the ridge to the turkey. After falling to the ground and catching our breath, we noticed that the turkey had only one leg. Evidentially, my gun had been slightly off target and shooting lower than what I had anticipated. Needless to say, there was no doubt that I was once again going to be the topic of conversation at the dinner table.

This hunt will always be an adventure that I will be reminded of for many years. I learned to appreciate nature and my family for teaching me safe hunting skills and a hobby that I can enjoy for years to come along with the tales of "The Hunt." □



©Richard Stubler

"Fred, could you untangle this backlash? My eyes aren't as good as they used to be."

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On The Water

by Jim Crosby

Your Safety Must Be Job One

Safety equipment is something we hear a lot about from many sources. However, I find some very important items missing from each such discussion.

Of course, we are most sensitive to the safety items required by law. Each year, we all break out the legal carry requirements list to make sure we are not going to get cited for something we have overlooked during our spring rescue from winterization.

The Federal and Virginia Boating Regulations cover such items as life jackets, fire extinguishers, navigation lights, sound-producing devices, visual distress signals and more. The regulations for Virginia are always available on the Virginia Department of Game and Inland Fisheries Web site which can be reached at: www.dgif.virginia.gov.

I want to address the safety items that are very necessary but not legally required. For example, a first aid kit can really save the day when those minor accidents raise their ugly head like pinched fingers, insect bites, minor cuts, abrasions and burns. A reasonably, well-equipped, first aid kit and a little training can take care of minor problems so all aboard can stay on the water and not have to return to the dock for care.

The size and contents of your first aid kit should be based on the size of your vessel and the number of passengers it is designed to carry. Boat equipment catalogs can be very helpful here because they list their first aid kits according to the number of potential people aboard and the duration of your typical cruise or outing.

The American Red Cross offers excellent training in first aid and cardiopulmonary resuscitation in almost every community across the state. For local classes, you can visit their national Web site at: www.redcross.org.

Life jackets are legally required but some very important safety equipment that should be attached are not—like a whistle, signal light, signal mirror or knife.

Think about it! Life jackets are worn in case you fall overboard or your vessel sinks from under you. In any case, you will find yourself in the water looking for a way to get rescued. To accomplish that you must have a means of attracting attention to your distress. Much equipment is sold to assist you in accomplishing just that which should

be attached securely to your life jacket.

Another thought about your life jacket—it should be bright orange in color to stand out against the water background. I have seen life jackets in dark colors and some even in dark green and blue. Can you imagine being seen floating in the water in a dark colored life jacket? It would be like trying to spot a coconut floating on the surface. Some bright orange life jackets even come with reflective tape sewn across the shoulders so they can be seen in the water at night. If yours does not have this feature, you can purchase strips of the reflective tape and affix them yourself.

The Coast Guard requires its personnel to have an emergency signaling light, signal mirror, whistle, and knife, in addition to a personal model of the Emergency Position Indicator Radio Beacon (EPIRB).

A knife is important if you get entangled in lines and are being dragged by the vessel. You, at the least, have a chance to cut yourself free.

I am a great believer in catalogs and the boating industry does a great job explaining their products and how they are used. I recommend checking the safety section of your favorite boating supplier's catalog each spring to make sure you are equipped and ready for any contingency that might come your way while enjoying the wonderful sport of recreational boating.

Boating is a very healthy activity provided you are prepared to do it safely. □



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RECIPES

by Joan Cone

Five Tasty Recipes For Bass

If you are going to eat bass, place them on ice immediately! Take a cooler with plenty of ice, as it makes a tremendous difference.

When cleaning your bass, **do not** scale them. Instead fillet your fish and skin the fillets. The muddy flavor you dislike comes from the skin and bones.

Lemon Dill Bass With Noodles

- 1½ pounds skinned bass fillets
- ⅓ cup water
- 2 tablespoons lemon juice
- 1 tablespoon grated lemon peel
- Salt and pepper to taste
- 1 teaspoon sugar
- 8 ounces medium noodles
- 2 teaspoons dried dill
- 1 cup (8 ounces) plain yogurt

In a 10-inch skillet, bring water, lemon juice, peel, sugar, and salt and pepper to a boil. Add fish and again bring liquid to a boil; reduce heat to low. Simmer covered for 10 to 15 minutes or until fish is cooked. Meanwhile, cook noodles in boiling water according to package directions. Drain noodles. Stir dill and yogurt into fish mixture and heat thoroughly. Serve immediately over drained noodles. Serves 4.

Down Home Bass Chowder

- 1 pound thick, skinned bass fillets
- ½ cup chopped onion
- 2 tablespoons melted butter or margarine
- 2 cups cubed potatoes
- 1 cup boiling water
- Salt and pepper to taste
- 2 cups milk
- 1 can (8¾ ounces) cream-style corn

Cut bass fillets into 1-inch square chunks. In a large pot, sauté onion in melted butter until soft. Add potatoes, water, salt and pepper and fish chunks. Cover and simmer for 15 minutes or until potatoes are tender. Add milk and corn and heat thoroughly. Serve piping hot. Makes 4 servings.

Bass Creole

- 1½ pound skinned bass fillets
- 2 tablespoons butter or margarine
- ¼ cup chopped onion
- ¼ cup chopped green pepper
- ¼ pound sliced mushrooms

- 1 can (14.5 ounces) diced tomatoes, drained
- 2 tablespoons lemon juice
- ¼ teaspoon dried tarragon leaves
- 1 bay leaf
- ¼ teaspoon Tabasco sauce
- Salt to taste

In a large skillet, melt butter and then add onion and green pepper. Cook until tender and add mushrooms. Cook another 3 minutes. To mixture add drained tomatoes, lemon juice, tarragon, bay leaf, Tabasco and salt. Cover and simmer for 20 minutes. Then add bass fillets, cover skillet and simmer 5 to 10 minutes or until fish flakes easily when tested with a fork. Serve this dish with cooked rice. Serves 4.

Bass With Almonds

(For wok)

- 1½ pounds skinned bass fillets.
- 4 tablespoons butter or margarine
- ½ cup whole or slivered blanched almonds
- ¼ cup white table wine
- ¼ cup lemon juice
- 1 tablespoon dried dill
- Salt and pepper to taste

Cut fillets into serving size portions. Preheat wok to medium high; add butter and melt. Sauté almonds in butter until lightly toasted, about 3 minutes. Remove almonds and save. Place wine, lemon juice, dill, salt and pepper in wok and stir to blend. Place fish in sauce and spoon sauce over fillets. Reduce heat (225° F. for electric wok), cover and poach for 6 to 7 minutes or until fish flakes easily when tested with a fork. Gently remove fillets to a warm platter. Spoon sauce over them and garnish with almonds. Serves 4.

Potato Chip Bass Fillets

(For microwave)

- 2 pounds skinned bass fillets.
- ½ cup Caesar salad dressing
- 1 cup crushed potato chips
- ½ cup shredded sharp Cheddar cheese

Cut fillets into 6 portions. Dip fish in salad dressing. Place fillets in a 13x9x2-inch baking dish with thicker portions to outside of dish. Combine crushed chips and cheese and sprinkle over fillets. Cover and cook at MEDIUM HIGH for 8 to 10 minutes or until fish flakes easily when tested with a fork. Turn dish twice during cooking. Makes 6 servings. □



story and illustration
by Spike Knuth

Naturally Wild



Black-Throated Green Warbler

Dendroica virens

They darted about in the green foliage quickly and nervously. Sometimes they'd come out to the end of a branch and suddenly fly up at and catch a small flying insect, then disappear as quickly into the new leaves of spring. When warblers migrate to and through Virginia in mid-April to early-May, the woodlands come alive with these colorful and active little birds. If you happen to be in their path at the right time you'll see and hear a wide array of colors and sounds as they dash and flutter in and out of the branches.

One such warbler is the black-throated green warbler (*Dendroica virens*), which has olive-green upper parts and a black throat and upper breast. The male's forehead, face, and cheeks are bright olive yellow. Its dark wings have two distinct white wing bars, and its relatively long, dark tail has white edgings. The underside is basically white. The black on the throat extends down the sides and fades into black streaks on the flanks.

Spring migrants are actually scarce in Virginia with most of them migrating north up the midsection of the country before veering east to the western Virginia mountains. They arrive beginning in mid-April and may nest as far south as northern Georgia. There is a small population of birds originally regarded as a subspecies (Wayne's warbler or *waynei*) that migrate to, and inhabit and nest in the Atlantic Coastal region from southeastern Virginia south to South Carolina. They arrive as early as late-March.

Black-throated green warblers nest mainly in conifers such as hem-

locks, white pine, balsam fir, spruce, larch, and red cedar, but are occasionally found in mixed hardwoods such as poplar, oak, beech, and birch, and sometimes grapevines. Wayne's warbler is found in mixed lowland hardwoods, and in cypress and Atlantic cedar swamps.

According to most observations, the nest can be built anywhere from a few inches to 70 feet off the ground. It is a compact structure of twigs, grass, bark strips, rootlets, plant down, and moss, lined with animal fur, and feathers. A normal clutch is four eggs that are creamy white with speckled and scrawled markings of reddish-brown and purple. The young hatch in about 12 days and fledge another 10 days later. Only one brood is reared.

These warblers feed on small caterpillars and other insect larvae, plant lice, leaf rollers, and small flying insects. They will also eat juniper and poison ivy berries and other tiny berries and seeds. Their spring song varies in the number of notes and pattern, and is described as a drowsy "zee-zee-zee-zoo-zee," with an accented ending. Look for black-throated green warblers higher in the tree canopies, although at times they are very curious, almost tame, and will come down to investigate an intruder "up close and personal"!

Their fall migration takes them southward on a more easterly path than in spring. Canadian breeders begin moving south in early July and migration peaks in Virginia in late-September. Wayne's warblers may stay along the coast through October. Black-throated green warblers winter regularly in southern Florida along the Gulf to Texas, and into Mexico, Central America, northern South America, Bahamas, Cuba and Jamaica. □



Outdoor Education Program presents a

Mother & Daughter Outdoors

August 20-22,
2004



This workshop is designed primarily for females. It is an excellent opportunity for females 9 years of age and above to learn the outdoor skills usually associated with hunting and fishing, but useful in a variety of outdoor pursuits.

This workshop is for you if:

- You would like to get your family involved in outdoor activities and need a place to start.
- You have never tried outdoor activities but have hoped for an opportunity to learn.
- You are a beginner who hopes to improve your skills.
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All of our courses focus on outdoor skills using hands-on instructional techniques. Our outdoor skills courses include outdoor cooking, fly fishing, wild edibles, introduction to firearms, skeet shooting, archery, high ropes

course, climbing wall, map and compass, stream ecology, mountain biking, and many more.

This year's event will be held at Holiday Lake 4-H Educational Center near Appomattox, Va. Registration fee is \$80 per person, which includes meals, lodging, course instruction, use of equipment, and evening events. Registration deadline is July 9, 2004, at 5:00 p.m.

For more information visit our Web site www.dgif.virginia.gov for a listing of events with links to registration forms for downloading. Information can also be obtained by calling the Outdoor Education Office at (804) 367-1147 or e-mailing mootzj@dgif.virginia.gov.

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